Muons at MTBF

second version

muons at MT6 based on g4beamline studies

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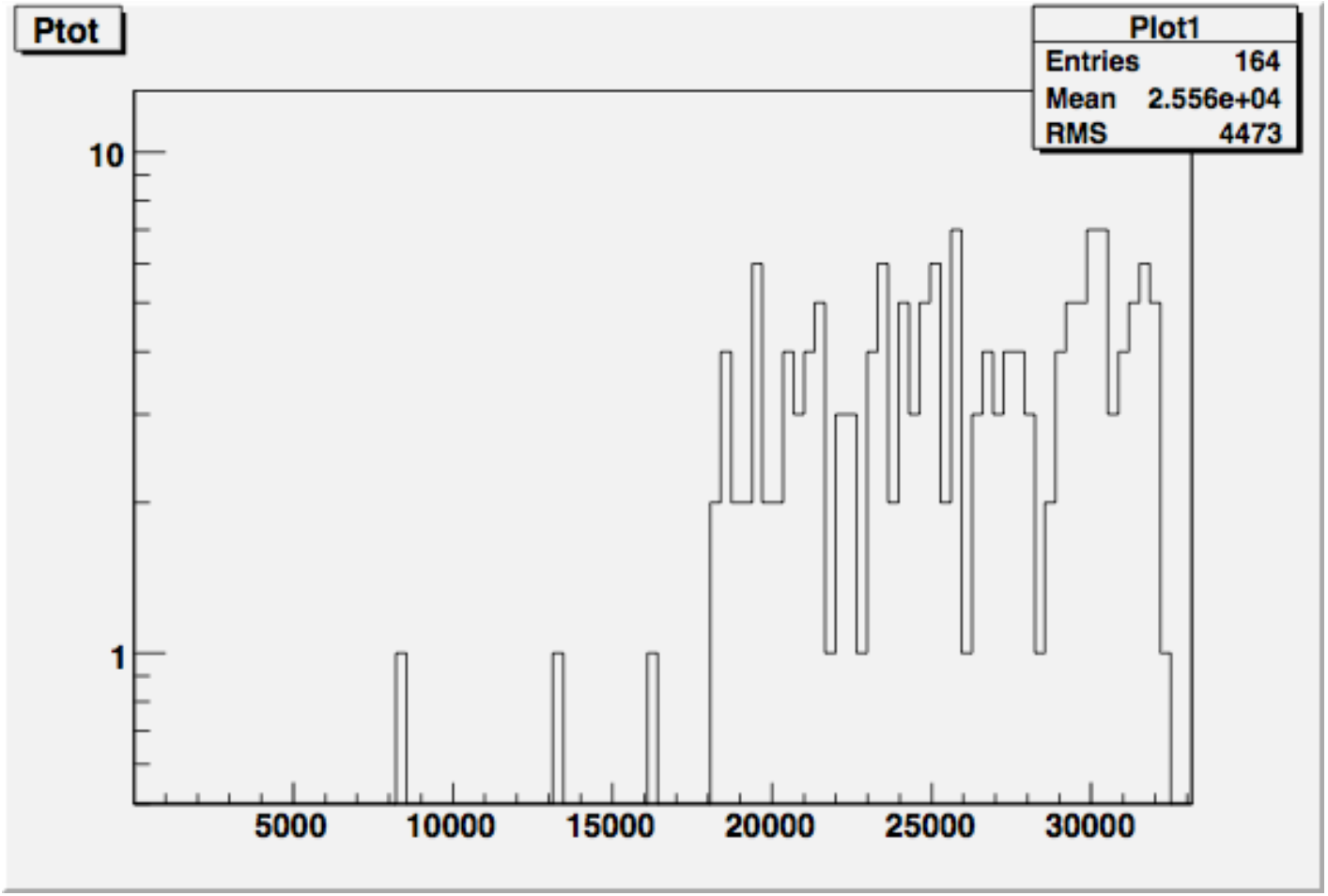
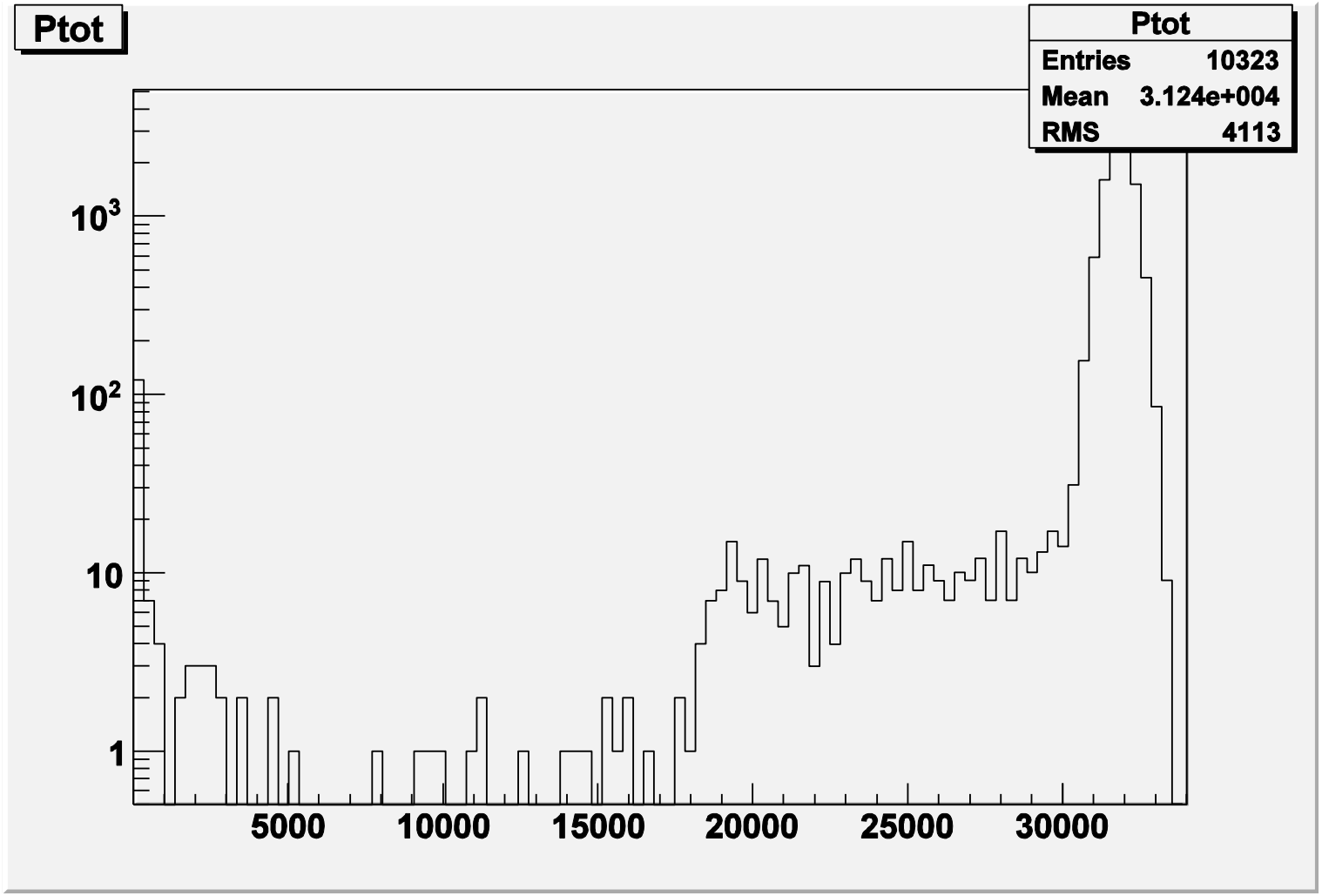
Comments

- G4beamline for FTBF from mt4tgt to mt6
- Draft Version of the simulation - still tuning and tweeking
- Initial ‘look’ - put absorber in code for the beam.
- More detailed:
- adjust pi+ beam so it sprays many devices
- study muons, compare to pi+ beam
- Look at muons on the absorber
- Check pions on the absorber

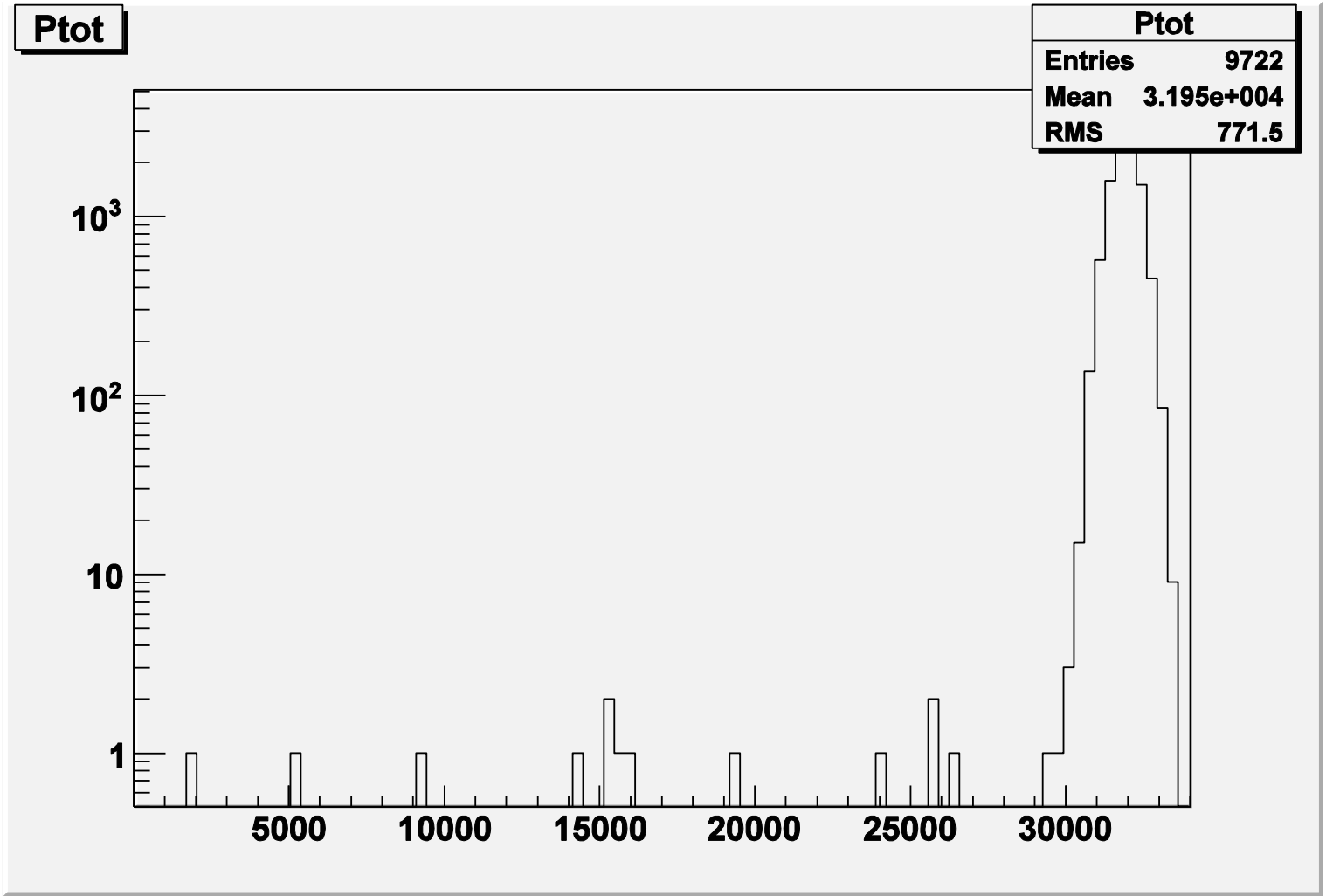
Preliminary Version - G4beamline 32 GeV/c π^+ beam μ^+ spectrum at mt6



Beam to FTBF, all types, no absorber

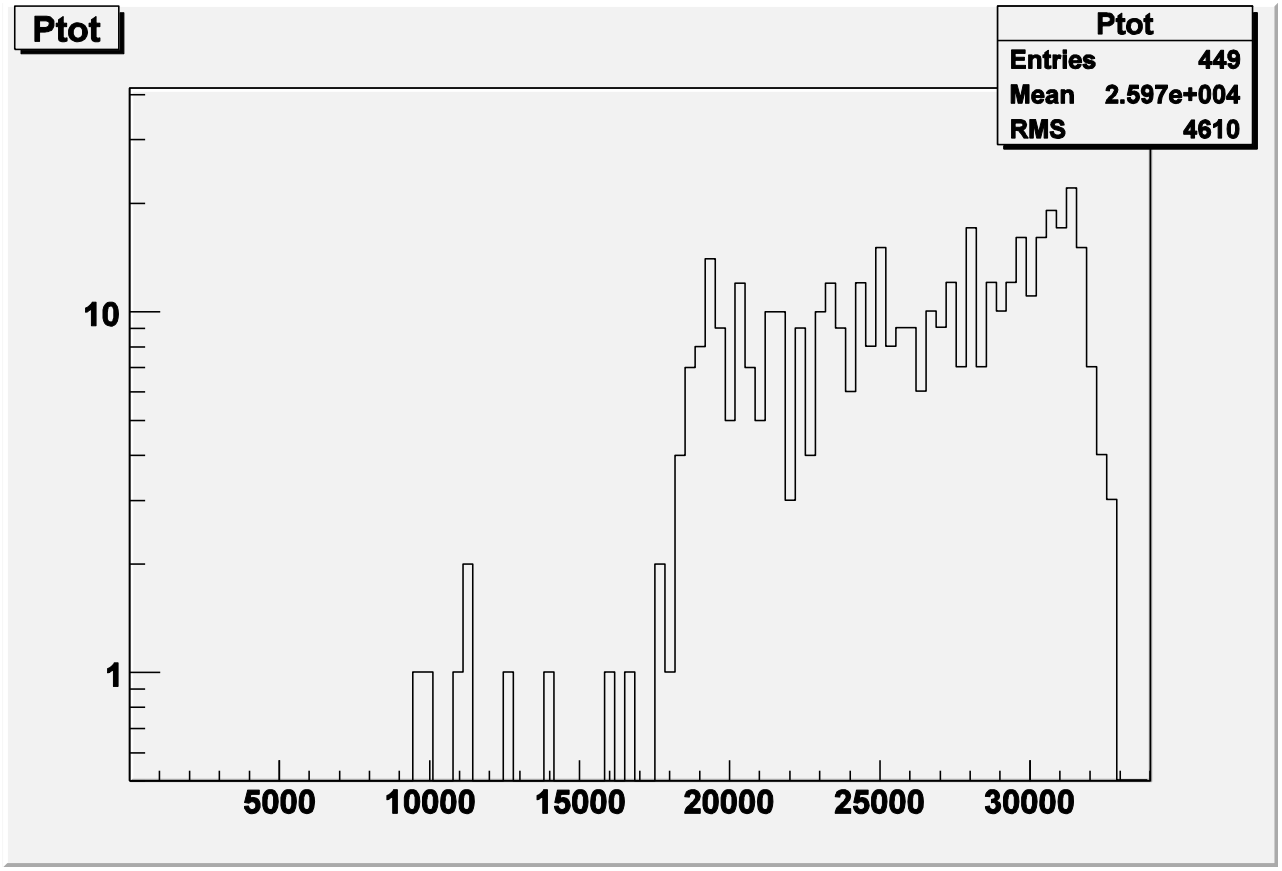


π^+

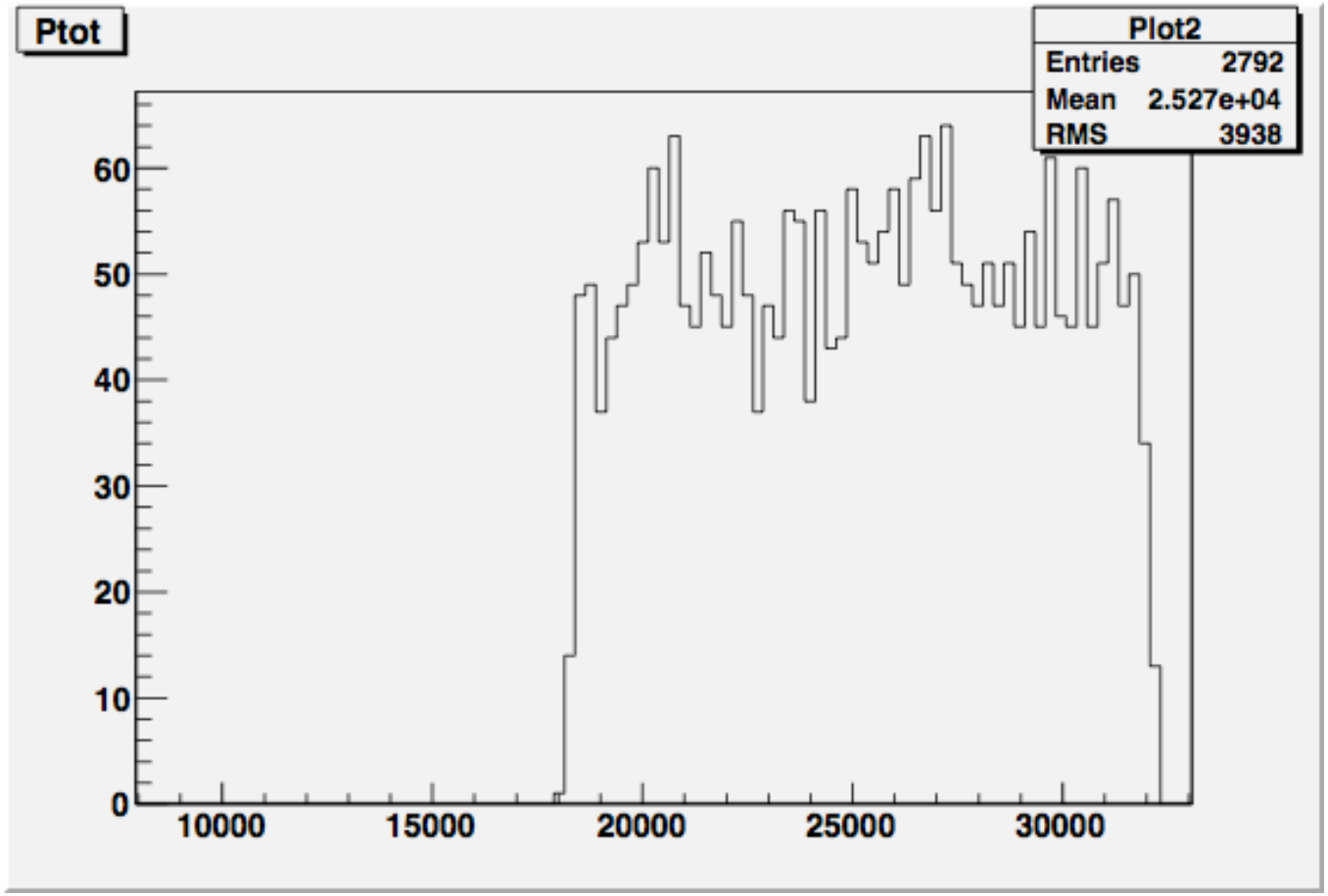

Ptot
Ptot
Entries 9722
Mean 3.195e+004
RMS 771.5
10^3
10^2
10
1
5000
10000
15000
20000
25000
30000

μ^+ 449 μ^+ / 9722 π^+ = 4.6%

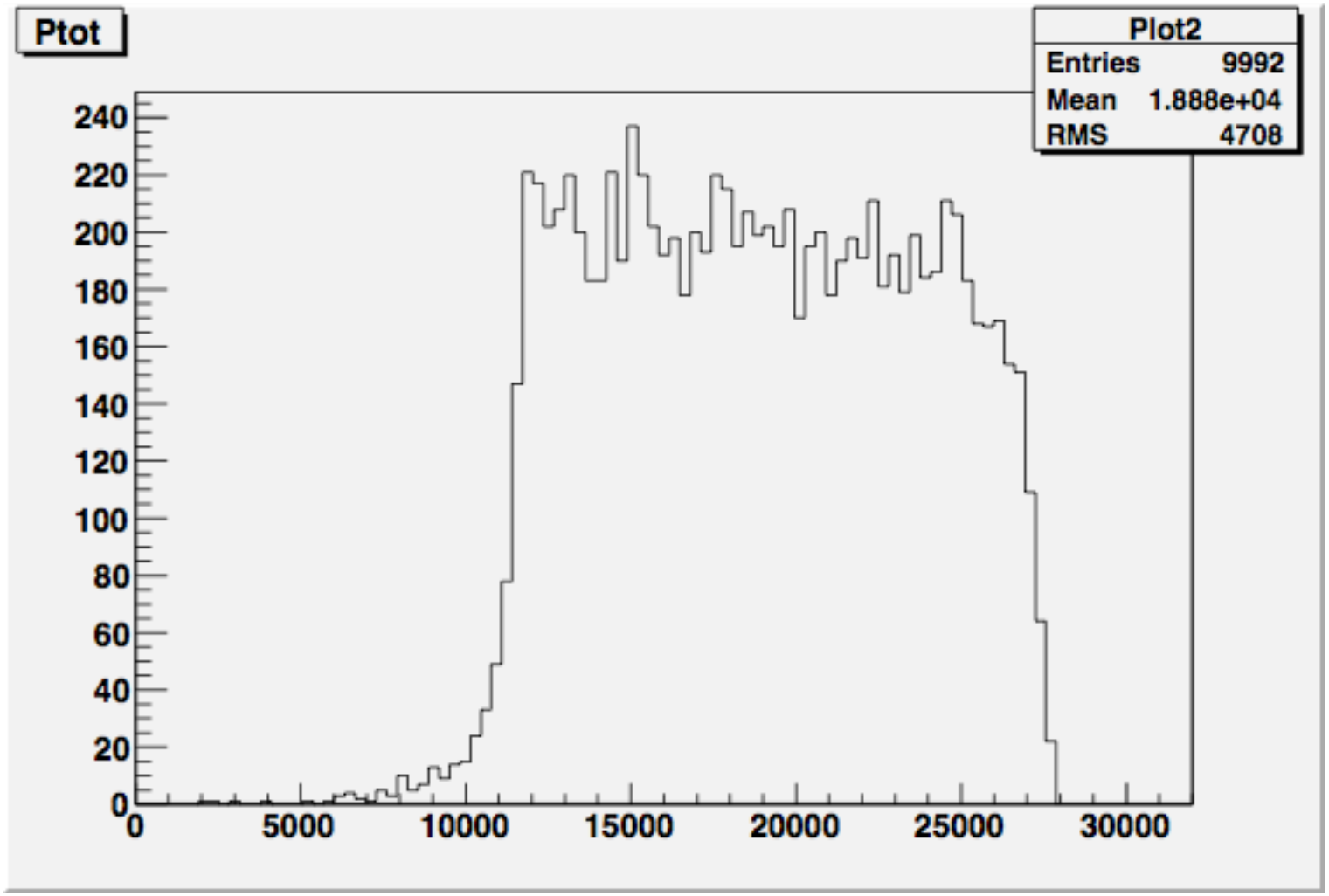
there may be an enhancement at high p – far upstream decays ?



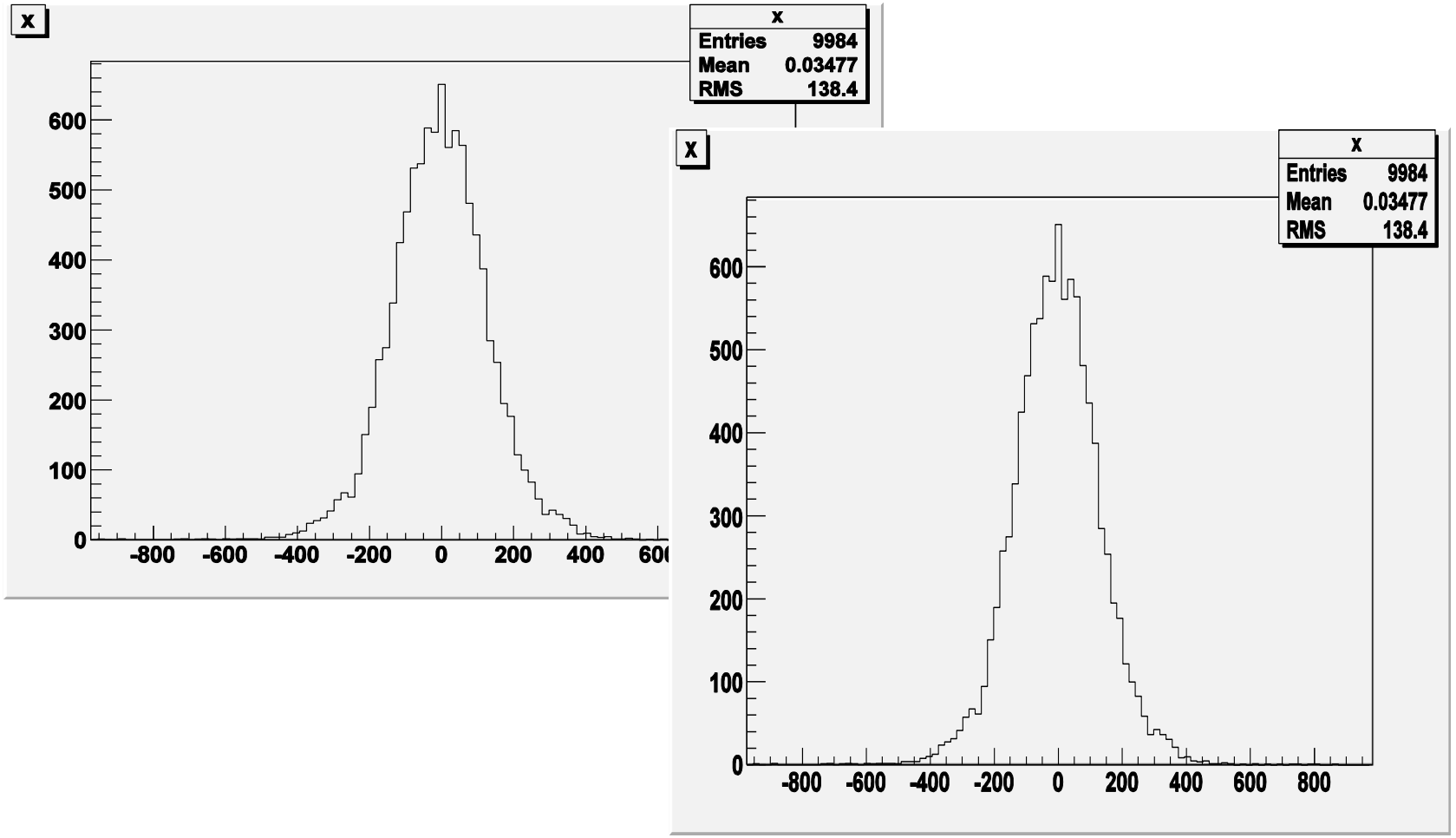
μ from 10K 32 GeV/c π decays
50 m decay length (~final bend to MT6)



Flat μ spectrum through 3.035 m Fe absorber
25250 ± 6750 MeV/c



μ beam profiles at 0.5 and 10.5 m downstream of the absorber. σ = 40, 200 mm respectively



Summary – Still a bit rough.

- 10 K π into absorber, get 14 μ through. Broad momentum spectrum.
- 10 K π * 4.6% = 460 from upstream decays
  Dominates

- dE for the 3.045 m Fe ~ 3.5 GeV/c assuming 1.45 MeV/c / g/cm^2 (but γ ~ 300, so dE/dx ~ 2) OK

- Conclude – S(p) ~ flat from $p_\pi/2$ to p_π - ~4 GeV/c
- - Rate ~ 4.6 % MT6SC1 < Check !!